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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/060,158	01/30/2002	Thomas E. Wiegand	0081279.120	7540

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EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/060,158	WIEGAND, THOMAS E.	
	Examiner	Art Unit	
	David S. Kim	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *13 May 2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Additional IDS - 16 April 2003*.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s):

(claim 7) a *second* muff and a *second* ear-plug,

(claim 8) the first and *second* muffs receive and provide signals over *separate channels*,

(claim 9) each muff has *separate* modulator and buffer circuits,

(claim 10) the circuits for the muffs *share use of an oscillator*,

(claim 13) the converting processes include *pulse width modulation and demodulation*, and

(claim 14) a *second* muff, a *second* ear-plug, and a *separate channel.*

No new matter should be entered.

2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant

will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. **Claim 11** is objected to because of the following informalities:

In claim 11, line 6, "light signals" is used where -- light signal -- may be intended.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1, 11-12, and 15** are rejected under 35 U.S.C. 102(b) as being anticipated by Reddemann et al. (U.S. Patent No. 5,073,947, hereinafter "Reddemann").

Regarding claim 1, Reddemann discloses:

A combination hearing protector/communication system assembly that attenuates undesired external sounds and delivers audio to the user, comprising:

a first hearing protecting muff (e.g., helmet 1 in the Figure) for attenuating sounds and receiving desired acoustic signals, the muff enclosing an optical transmitter (transmitter 4) for transmitting optical signals representative of the received acoustic signals, and

an ear-plug assembly (earplug arrangement 14) including an optical receiver (earplug-receiver 6) for receiving the transmitted optical signals and a transducer (electroacoustic transformer or earphone 8) for providing acoustic signals representative of the acoustic signals received by the muff.

Regarding claim 11, Reddemann discloses:

A method for providing hearing protection and desired audio signals, comprising:

a hearing protecting muff receiving an audio signal (helmet 1 in the Figure),

converting the audio signal to a light signal (transmitter 4);

transmitting the light signal from the muff to the ear-plug (ray 5);

an ear-plug with a detector receiving the light signals (earplug arrangement 14, earplug receiver 6);

converting the optical signal to an acoustic signal (electroacoustic transformer or earphone 8).

Regarding claim 12, Reddemann discloses:

The method of claim 11, wherein the transmitting includes transmitting one of visible or infrared light (infrared ray 5).

Regarding claim 15, Reddemann discloses:

A hearing protection system including a muff (e.g., helmet 1 in the Figure) and an ear-plug (earplug arrangement 14), with optical communication therebetween (ray 5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 2-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Reddemann in view of Ramaswami et al. (*Optical Networks: A Practical Perspective*, hereinafter "Ramaswami").

Regarding claim 2, Reddemann does not expressly disclose:

The assembly of claim 1, wherein the optical transmitter includes one or more light emitting diodes (LEDs).

Rather, Reddemann broadly teaches the use of infrared rays. LEDs are known to be common optical transmitters that transmit infrared rays, as shown in Ramaswami (p. 141-143, 160, optical signals in the 1310 nm wavelength window are in the infrared range). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to arrange the optical transmitter of Reddemann to employ one or more LEDs, as taught in Ramaswami. One of ordinary skill in the art would have been motivated to do this since LEDs are known to be among the cheaper choices for optical transmitters (Ramaswami, end of p. 141).

Regarding claims 3-4, these two claims describe respectively two different embodiments for the muff (Applicant's specification, p. 3, l. 14-16). Reddemann discloses the embodiment for claim 4:

(**claim 4**) The assembly of claim 2, wherein the muff incorporates a modulator (means that performs the modulating in col. 3, l. 9-10) for providing modulated acoustic signals to the LEDs.

Reddemann in view of Ramaswami does not expressly disclose the embodiment for claim 3:

(**claim 3**) The assembly of claim 2, wherein the muff receives modulated acoustic signals from a remote modulator and provides the signals to the LEDs.

However, this embodiment is a structurally obvious alternative to that of claim 4. Even Applicant's specification appears to describe it as such (p. 3, l. 14-16). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to arrange the muff to receive modulated acoustic signals from a remote modulator and to provide the signals to the LEDs. One of ordinary skill in the art would have been motivated to do this to simplify the

structure of the muff. That is, fewer components in the actual muff lead to conventional benefits, such as decreased weight and lower manufacturing costs.

8. **Claims 5-10 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Reddemann.

Regarding claim 5, Reddemann does not expressly disclose:

The assembly of claim 1, wherein the optical receiver includes a photovoltaic cell.

Rather, Reddemann teaches the use of a photodiode (col. 3, l. 11-13). Photovoltaic cells and photodiodes are both known to be common devices for receiving optical signals and converting them into corresponding electrical signals. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to arrange the optical receiver to include a photovoltaic cell. One of ordinary skill in the art would have been motivated to do this for a number of possible reasons. One reason would be to provide a simple design alternative to the photodiodes of Reddemann. Another reason would be to provide an energy source since photovoltaic cells (a.k.a. solar cells) have the well-known characteristic of providing energy from received light.

Regarding claim 6, Reddemann discloses:

The assembly of claim 5, wherein the ear-plug assembly includes a demodulator (means that performs the demodulating in col. 3, l. 20-21) and a transducer (electroacoustic transformer or earphone 8), the photovoltaic cell providing signals to the demodulator, which provides demodulated signals to the transducer.

Regarding claim 7, Reddemann does not expressly disclose:

The assembly of claim 1, further comprising a second muff and a second ear-plug, each substantially the same as the first.

Rather, Reddemann shows one muff and one ear-plug. However, helmets and headphones are conventionally substantially symmetrical. At the time the invention was made,

it would have been obvious to a person of ordinary skill in the art to employ a second muff and a second ear-plug, each substantially the same as the first. One of ordinary skill in the art would have been motivated to do this to shield the other ear from undesirable surrounding noises (col. 1, l. 15-16).

Regarding claim 8, Reddemann does not expressly disclose:

The assembly of claim 7, wherein the first and second muffs receive and provide signals over separate channels.

However, such an arrangement of separate channels describes the extremely well known practice of providing stereo sound. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement this arrangement of separate channels. One of ordinary skill in the art would have been motivated to do this to provide stereo sound, which provides a more natural and live sound than the common alternative of mono sound, or monophonic sound, or monaural sound.

Regarding claim 9, Reddemann does not expressly disclose:

The assembly of claim 8, wherein each muff has separate modulator and buffer circuits.

However, with a stereo arrangement of channels, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement each muff with separate modulator and buffer circuits. One of ordinary skill in the art would have been motivated to do this since a stereo arrangement of channels employs separate channels, each typically requiring separate modulation and buffering.

Regarding claim 10, Reddemann discloses:

The assembly of claim 9, wherein the circuits for the muffs share use of an oscillator (common practice in providing stereo sound).

Regarding claim 14, Reddemann does not expressly disclose:

The method of claim 11, further comprising receiving an audio signal with a second muff, and transmitting a light signal to a second ear-plug over a separate channel.

Rather, Reddemann shows one muff, one ear-plug, and one channel. However, helmets and headphones are conventionally substantially symmetrical. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ a second muff, a second ear-plug, and a second channel. One of ordinary skill in the art would have been motivated to do this to shield the other ear from undesirable surrounding noises (col. 1, l. 15-16).

Also, such an arrangement of separate channels describes the extremely well known practice of providing stereo sound. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement this arrangement of separate channels. One of ordinary skill in the art would have been motivated to do this to provide stereo sound, which provides a more natural and live sound than the common alternative of mono sound, or monophonic sound, or monaural sound.

9. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Reddemann as applied to claim 11 above, and further in view of Anderson et al. (U.S. Patent Application Publication No. US 2002/0030871 A1, hereinafter "Anderson").

Regarding claim 13, Reddemann does not expressly disclose:

The method of claim 11, wherein the converting processes include pulse width modulation and demodulation.

Rather, Reddemann teaches generic modulation and demodulation of signals. Also, pulse width modulation and demodulation is a known modulation scheme throughout the communication arts. For an example, see Anderson. Anderson, like Reddemann, teaches an infrared system. The system of Anderson also comprises converting processes that do include pulse width modulation and demodulation (Fig. 2). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ pulse width

modulation and demodulation. One of ordinary skill in the art would have been motivated to do this since it is known that pulse width modulation and demodulation is one of various well-known modulation schemes that enable the transmission and reception of communication signals. Additionally, Anderson teaches that PWM can be used to obtain high quality communication with low power consumption (paragraph [0010]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DSK

M. R. SEDIGHIAN
PRIMARY EXAMINER